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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/708,089

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Michael J. French

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EXAMINER

WRIGHT, ANDREW D

ART UNIT

PAPER NUMBER

3617

DATE MAILED: 02/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



Office Action Summary

Application No.

10/708,089

Applicant(s)

FRENCH ET AL.

Examiner

Andrew Wright

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of claims 19-27 in the reply filed on 12/20/04 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). It is noted that applicant cancelled non-elected claims 1-18 in the reply filed 12/20/04.
2. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 19-25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDowell et al. (US 6,026,792) in view of Knight et al. (US 6,581,579) and Tanaka et al. (US 6,431,838). McDowell shows an outboard motor with an internal combustion engine, an engine component in the form of a fuel pump (60), and an engine control unit

(66). The electrical power source for the engine and engine components is an alternator (column 7, lines 40-41) that provides voltage in the range of approximately 8 volts to approximately 30 volts (column 9, lines 37-40). McDowell does not disclose that the fuel pump is rated to operate at a rated maximum voltage, and that the engine control unit controls the engine component to operate at a voltage that exceeds the rated maximum voltage. Engine components such as fuel pumps are commonly rated to operate at a maximum rated voltage. Applicant admits this in Paragraph 0005 of the instant application, where it is stated that a "fuel pump ... [is] customarily designed to operate with a nominal 12 or 24 volt input." Knight also discloses the use of a 24 volt fuel pump. The skilled artisan making and using the McDowell invention would be motivated to use a fuel pump that is operationally rated within the voltage range of the alternator, and 24 volt fuel pumps are well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a fuel pump (60) that is rated to operate at a rated maximum voltage of 24 volts.

5. Still regarding claim 19, McDowell does not disclose that the engine control unit controls the engine component to operate at a voltage that exceeds the rated maximum voltage. McDowell does disclose another engine component, the ignition system, that is controlled to operate within the same voltage range of the alternator. McDowell discloses that the engine control unit (ECU) uses a pulse width modulator (PWM) to increase the pulse width of voltage to the ignition system when the alternator voltage is low, and to decrease the pulse width of the voltage to the ignition system when the alternator voltage is high. McDowell is silent as to PWM used with the fuel pump.

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Tanaka shows a fuel pump for a small sized vehicle. The Tanaka pump is controlled by an ECU using PWM to prevent the injection amount from being varied due to changes in the supply voltage of the pump. When the power supply voltage of the fuel pump is more than the pump rated maximum voltage, the pulse width of the PWM is decreased as compared to when the power supply voltage is equal to the rated maximum voltage. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify McDowell by using PWM with the fuel pump to allow the pump to effectively operate at voltages above the rated maximum voltage. The motivation would be to allow effective operation of the fuel pump at the higher end of the alternator output range (i.e. 25-30 volts).

6. Regarding claim 20, the alternator applies voltages in excess of 24 volts, the maximum rated voltage for the fuel pump.
 7. Claim 21, the PWM switches the fuel pump between ON and OFF states to maintain current through the fuel pump at an average desired amperage.
 8. Claim 22, the ECU and PWM control system as described necessarily compares the supply voltage to a reference voltage.
 9. Claim 23, the ECU and PWM control system as described necessarily uses a comparison and a threshold amount to determine how wide to make the pulse widths, and therefore, when to switch to the OFF state.
 10. Claim 24, the modified invention as described above utilizes a fuel pump.
- McDowell discloses that the engine is a two-stroke engine, and that lubricating oil can be mixed with the fuel. Therefore the pump constitutes an oil pump.

11. Claim 25, the pump of the modified invention is rated to operate nominally at 24 volts.

12. Claim 27, McDowell discloses a supply voltage of between 8 and 30 volts. The claim recitation "configured to operate..." is an intended use recitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963). Here, the McDowell engine is capable of operating at 30 volts.

13. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDowell et al. in view of Knight and Tanaka as applied to claim 19 above, and further in view of Dragoi et al. (US 6,838,847). Tanaka discloses a FET associated with the PWM. The modified invention does not disclose the use of a MSOFET. Dragoi teaches the equivalence of FET and MOSFET in PWM. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify McDowell by using a MOSFET instead of a FET. The motivation would be to utilize a particular type of FET.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ryberg ('819) discusses FR 2,550,396 in which a watercraft battery charger is supplied with a voltage higher than the rated voltage for a short period of time for faster charging. Pham et al. ('193) discloses an outboard engine with a power source that supplies a low voltage (12 volts) for some components and a high voltage (24 volts) for other components. Lee ('511) discloses a control circuit that uses PWM to drive a load (such as a fuel pump motor) at a substantially constant pulse energy over a wide range of different voltages (20-80 volts) for powering the load. Taipale ('304) discloses an outboard motor with a fuel pump that is controlled via PWM.

15. Any inquiry concerning this communication should be directed to examiner Andrew D. Wright at telephone number (703) 308-6841. The examiner can normally be reached Monday-Friday from 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, S. Joe Morano, can be reached at (703) 308-0230. The fax number for official communications is 703-872-9306. The fax number directly to the examiner for unofficial communications is 703-746-3548.

The examiner and his supervisor are relocating to the new Office campus in Alexandria, VA, on or around April 5, 2005. Telephone calls to the examiner and/or examiner's supervisor after that date should be directed as follows. The examiner's new telephone will be (571) 272-6690. The examiner's fax number for unofficial

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communications will be (571) 273-6690. The supervisor's new telephone number will be (571) 272-6684.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andrew D. Wright
Patent Examiner
Art Unit 3617

AW 1-31-05
ANDREW D. WRIGHT
PRIMARY EXAMINER